BRUHAT BANGALORE MAHANAGARA
PALIKE

QUALITY TEST REPORT

PMC for the Package-I civil works in Dasarahalli Division

Name of work: Comprehensive development of bad roads and improvements to road side drain, footpaths, Asphalting and concreting including culvert selected main and other connecting roads of package No.I in ward No.14, Bagalagunte of Dasarahalli Division in Dasrahalli zone Comprising of 8 works as indicated in Sl No. 122, 123, 124, 125, 126, 127, 128 & 129

Project Cost:1500.00 Lakh

3nd and Part Bill

(Tejus Consultants)

PMC for the Package-1 civil works in Dasarahalli

Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants
Contractor :	Sri Sai Charan Constructions
Name of Work:	Comprehensive development of bad roads and improvements to road side drain, footpaths, Asphalting and concreting including culvert selected main and other connecting roads of package No.1 in ward No.14, Bagalagunte of Dasarahalli Division in Dasrahalli zone Comprising of 8 works as indicated in Sl No. 122, 123, 124, 125, 126, 127, 128 & 129

GRADATION OF AGGREGATES

(WMM)

Total weight of sample taken (gms): 16000 — Date of Test : 18-12-2021

Sieve Size (mm)	Wt. Retained (gms)	Cumulative Wt. Retained (gms)	Cumulative Wt. Retained (%)	% Passing	Specification Limits
53 mm	0	0	0	100	100
45 mm	425	425	2.77	97.24	95 – 100
22.4 mm	4327	4752	29.08	71.11	60 – 80
11.2 mm	2998	7750	50	50.34	40 – 60
4.75 mm	2860	10610	67.3	33.16	25 – 40
2.36 mm	1856	12466	78.43	22.1	15 – 30
600 mic	963	13429	84.3	16.27	8 – 22
75 mic	1922	15351	96.09	4.56	0 – 8
Pan	649	16000	100	-	-

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants
Contractor :	Sri Sai Charan Constructions
Name of Work:	Comprehensive development of bad roads and improvements to road side drain, footpaths, Asphalting and concreting including culvert selected main and other connecting roads of package No.1 in ward No.14, Bagalagunte of Dasarahalli Division in Dasrahalli zone Comprising of 8 works as indicated in Sl No. 122, 123, 124, 125, 126, 127, 128 & 129

GRADATION OF AGGREGATES

(WMM)

Total weight of sample taken (gms): 16000 — Date of Test : 18-12-2021

Sieve Size (mm)	Wt. Retained (gms)	Cumulative Wt. Retained (gms)	Cumulative Wt. Retained (%)	% Passing	Specification Limits
53 mm	0	0	0	100	100
45 mm	425	425	2.77	97.24	95 – 100
22.4 mm	4327	4752	29.08	71.11	60 – 80
11.2 mm	2998	7750	50	50.34	40 – 60
4.75 mm	2860	10610	67.3	33.16	25 – 40
2.36 mm	1856	12466	78.43	22.1	15 – 30
600 mic	963	13429	84.3	16.27	8 – 22
75 mic	1922	15351	96.09	4.56	0 – 8
Pan	649	16000	100	-	-

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants
Contractor :	Sri Sai Charan Constructions
Name of Work:	Comprehensive development of bad roads and improvements to road side drain, footpaths, Asphalting and concreting including culvert selected main and other connecting roads of package No.1 in ward No.14, Bagalagunte of Dasarahalli Division in Dasrahalli zone Comprising of 8 works as indicated in Sl No. 122, 123, 124, 125, 126, 127, 128 & 129

GRADATION OF AGGREGATES

(WMM)

Total weight of sample taken (gms): 16000 — Date of Test : 18-12-2021

Sieve Size (mm)	Wt. Retained (gms)	Cumulative Wt. Retained (gms)	Cumulative Wt. Retained (%)	% Passing	Specification Limits
53 mm	0	0	0	100	100
45 mm	425	425	2.77	97.24	95 – 100
22.4 mm	4327	4752	29.08	71.11	60 – 80
11.2 mm	2998	7750	50	50.34	40 – 60
4.75 mm	2860	10610	67.3	33.16	25 – 40
2.36 mm	1856	12466	78.43	22.1	15 – 30
600 mic	963	13429	84.3	16.27	8 – 22
75 mic	1922	15351	96.09	4.56	0 – 8
Pan	649	16000	100	-	-

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

t :	BRUHAT BANGALORE MAHANAGARA PALIKE
ultant :	Tejus Consultants
ractor :	Sri Sai Charan Constructions
e of Work:	KSRRB M500-6. Providing and applying primer coat with S.S. bitumen emulsion on prepared surface of granular base such as WMM including cleaning of road surface and spraying primer at the rate of 0.60 kg / sqm using mechanical means complete as per specifications.Clause 502 of MORTH V revision

RATE OF SPREADING

(PRIME COAT)

Date of Test: 30-12-2021

Sl No	DESCRIPTION	1	2	3	4	5
1	WT. OF EMPTY TRAY (gm)	810	810	810	810	810
2	WT. OF TRAY + BITUMEN (gm)	860	866	863	866	866
3	WT. OF BITUMEN (2-1) (gm)	53	57	53	56	54
4	AREA OF TRAY	0.09	0.09	0.09	0.09	0.09
5	RATE OF SPRAY (kg/m^2)	5.89	6.33	5.89	6.22	6.00
6	AVERAGE RATE OF SPRAY (kg/m^2)	6.07				

narks : Results Found to be satisfactory.

Tested by

Q.C. Engineer

Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants
Contractor :	Sri Sai Charan Constructions
Name of Work:	KSRRB M500-6. Providing and applying primer coat with S.S. bitumen emulsion on prepared surface of granular base such as WMM including cleaning of road surface and spraying primer at the rate of 0.60 kg / sqm using mechanical means complete as per specifications.Clause 502 of MORTH V revision

RATE OF SPREADING
(PRIME COAT)

Date of Test: 28-12-2021

Sl No	DESCRIPTION	1	2	3	4	5
1	WT. OF EMPTY TRAY (gm)	810	810	810	810	810
2	WT. OF TRAY + BITUMEN (gm)	861	868	864	862	863
3	WT. OF BITUMEN (2-1) (gm)	51	58	54	55	59
4	AREA OF TRAY	0.09	0.09	0.09	0.09	0.09
5	RATE OF SPRAY (kg/m^2)	5.67	6.44	6.00	6.11	6.56
6	AVERAGE RATE OF SPRAY (kg/m^2)	6.16				

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants
Contractor :	Sri Sai Charan Constructions
Name of Work:	KSRRB M500-6. Providing and applying primer coat with S.S. bitumen emulsion on prepared surface of granular base such as WMM including cleaning of road surface and spraying primer at the rate of 0.60 kg / sqm using mechanical means complete as per specifications.Clause 502 of MORTH V revision

RATE OF SPREADING
(PRIME COAT)

Date of Test: 3-01-2022

Sl No	DESCRIPTION	1	2	3	4	5
1	WT. OF EMPTY TRAY (gm)	810	810	810	810	810
2	WT. OF TRAY + BITUMEN (gm)	860	866	863	866	866
3	WT. OF BITUMEN (2-1) (gm)	53	57	53	56	54
4	AREA OF TRAY	0.09	0.09	0.09	0.09	0.09
5	RATE OF SPRAY (kg/m^2)	5.89	6.33	5.89	6.22	6.00
6	AVERAGE RATE OF SPRAY (kg/m^2)	6.07				

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

ient :	BRUHAT BANGALORE MAHANAGARA PALIKE
nsultant :	Tejus Consultants
ntractor :	Sri Sai Charan Constructions
me of Work:	KSRRB M500-17. Providing and laying dense graded bituminous macadam using crushed aggregates of specified grading; premixed with VG30 grade bituminous binder and, transporting the hot mix to work site, laying to the required grade, level and ialignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications. Clause 505 of MORTH V revision do - using 40/60 TPH capacity H.M.P. with Mechanical paver Gr-II (50 mm to 75 mm) with 4.5 % VG-30 Bitumen

BITUMEN CONTENT & GRADATION OF PAVING MIX (DBM)

		Date of Test:	30-12-2021
1	Wt of Centre bowl (g)		1080
2	Wt of filter paper before Extraction (g) F1		4
3	Wt of Mix material (g) W1		500
4	Wt of Bowl + filter paper + Mix material (g)		1584
5	Wt of filter paper after Extraction (g) F2		5
6	Wt of Bowl + filter paper + Mix material after Extraction (g)		1559.5
7	Wt of Extracted material (g) W2		474.5
8	Wt of Binder (g) W=W1-W2		25.5
9	Bitumen content by wt of Mix % =((W1-(W2+1))/W1)		4.90%

otal weight of sample taken (gms): 475

ieve size (mm)	Weight retained (g)	Cumulative weight retained (g)	% Retained	% Passing	Specification Limits %
37.5	0	0	0	100	100
26.5	25	25	5.26	94.74	90 – 100
19	66	91	19.16	80.84	71-95
13.2	77	168	35.37	64.63	56-80
4.75	75	243	51.16	48.84	38-54
2.36	85	328	69.05	30.95	28-42
0.3	68	396	83.37	16.63	>7-21
0.075	76	472	99.37	0.63	02<08
Pan	3	475	100.00	-	-

emarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants
Contractor :	Sri Sai Charan Constructions
Name of Work:	KSRRB M500-17. Providing and laying dense graded bituminous macadam using crushed aggregates of specified grading; premixed with VG30 grade bituminous binder and, transporting the hot mix to work site, laying to the required grade, level and ialignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications. Clause 505 of MORTH V revision do - using 40/60 TPH capacity H.M.P. with Mechanical paver Gr-ll (50 mm to 75 mm) with 4.5 % VG-30 Bitumen

BITUMEN CONTENT & GRADATION OF PAVING MIX (DBM)

1	Wt of Centre bowl (g)	Date of Test:	28-12-2021
2	Wt of filter paper before Extraction (g) F1		1080
3	Wt of Mix material (g) W1		3
4	Wt of Bowl + filter paper + Mix material (g)		500
5	Wt of filter paper after Extraction (g) F2		1583
6	Wt of Bowl + filter paper + Mix material after Extraction (g)		4
7	Wt of Extracted material (g) W2		1558
8	Wt of Binder (g) W=W1-W2		474
9	Bitumen content by wt of Mix % =((W1-(W2+1)) / W1		26
			5.00%

Total weight of sample taken (gms): 474.5

Sieve size (mm)	Weight retained (g)	Cumulative weight retained (g)	% Retained	% Passing	Specification Limits %
37.5	0	0	0	100	**100**
26.5	20	20	4.21	95.79	**90 – 100**
19	53	73	15.38	84.62	**71-95**
13.2	75	148	31.19	68.81	**56-80**
4.75	95	243	51.21	48.79	**38-54**
2.36	92	335	70.60	29.40	**28-42**
0.3	90	425	89.57	10.43	**>7-21**
0.075	46	471	99.26	0.74	**02<08**
Pan	3.5	474.5	100.00	-	-

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants
Contractor :	Sri Sai Charan Constructions
Name of Work:	KSRRB M500-17. Providing and laying dense graded bituminous macadam using crushed aggregates of specified grading; premixed with VG30 grade bituminous binder and, transporting the hot mix to work site, laying to the required grade, level and ialignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications. Clause 505 of MORTH V revision do - using 40/60 TPH capacity H.M.P. with Mechanical paver Gr-ll (50 mm to 75 mm) with 4.5 % VG-30 Bitumen

BITUMEN CONTENT & GRADATION OF PAVING MIX (DBM)

		Date of Test:	03-01-2022
1	Wt of Centre bowl (g)		1080
2	Wt of filter paper before Extraction (g) F1		3
3	Wt of Mix material (g) W1		500
4	Wt of Bowl + filter paper + Mix material (g)		1583
5	Wt of filter paper after Extraction (g) F2		4.5
6	Wt of Bowl + filter paper + Mix material after Extraction (g)		1560
7	Wt of Extracted material (g) W2		475.5
8	Wt of Binder (g) W=W1-W2		24.5
9	Bitumen content by wt of Mix % =((W1-(W2+1)) / W1		4.70%

Total weight of sample taken (gms): 475.5

Sieve size (mm)	Weight retained (g)	Cumulative weight retained (g)	% Retained	% Passing	Specification Limits %
37.5	0	0	0	100	**100**
26.5	23	23	4.84	95.16	**90 – 100**
19	75	98	20.61	79.39	**71-95**
13.2	78	176	37.01	62.99	**56-80**
4.75	84	260	54.68	45.32	**38-54**
2.36	86	346	72.77	27.23	**28-42**
0.3	68	414	87.07	12.93	**>7-21**
0.075	58	472	99.26	0.74	**02<08**
Pan	3.5	475.5	100.00	-	-

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer

PMC for the Package-1 civil works in Dasarahalli

Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants
Contractor :	Sri Sai Charan Constructions
Name of Work:	KSRRB M500-10. Providing and applying tack coat using 80/100 grade Sqm bitumen(VGIO) in boiler fitted with spray set distributor at the rate of 0.25 kg per sqm on the existing prepared bituminous surface (primed surface) cleaned with mechanical broom, complete as per specifications. Clause 503 of MORTH V revision

RATE OF SPREADING
(TACK COAT)

Date of Test: 30-12-2021

Sl No	DESCRIPTION	1	2	3	4	5
1	WT. OF EMPTY TRAY (gm)	881	889	892	871	869
2	WT. OF TRAY + BITUMEN (gm)	857	871	872	892	888
3	WT. OF BITUMEN (2-1) (gm)	26	20	21	23	20
4	AREA OF TRAY	0.09	0.09	0.09	0.09	0.09
5	RATE OF SPRAY (kg/m^2)	2.89	2.22	2.33	2.56	2.22
6	AVERAGE RATE OF SPRAY (kg/m^2)	2.44				

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants
Contractor :	Sri Sai Charan Constructions
Name of Work:	KSRRB M500-10. Providing and applying tack coat using 80/100 grade Sqm bitumen(VGlO) in boiler fitted with spray set distributor at the rate of 0.25 kg per sqm on the existing prepared bituminous surface (primed surface) cleaned with mechanical broom, complete as per specifications. Clause 503 of MORTH V revision

RATE OF SPREADING
(TACK COAT)

Date of Test: 3-01-2022

Sl No	DESCRIPTION	1	2	3	4	5
1	WT. OF EMPTY TRAY (gm)	881	889	892	871	869
2	WT. OF TRAY + BITUMEN (gm)	857	871	872	892	888
3	WT. OF BITUMEN (2-1) (gm)	23	19	20	22	25
4	AREA OF TRAY	0.09	0.09	0.09	0.09	0.09
5	RATE OF SPRAY (kg/m^2)	2.56	2.11	2.22	2.44	2.78
6	AVERAGE RATE OF SPRAY (kg/m^2)	2.42				

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	Tejus Consultants
Contractor :	Sri Sai Charan Constructions
Name of Work:	KSRRB M500-10. Providing and applying tack coat using 80/100 grade Sqm bitumen(VGIO) in boiler fitted with spray set distributor at the rate of 0.25 kg per sqm on the existing prepared bituminous surface (primed surface) cleaned with mechanical broom, complete as per specifications. Clause 503 of MORTH V revision

RATE OF SPREADING
(TACK COAT)

Date of Test: 4-01-2022

Sl No	DESCRIPTION	1	2	3	4	5
1	WT. OF EMPTY TRAY (gm)	881	889	892	871	869
2	WT. OF TRAY + BITUMEN (gm)	857	871	872	892	888
3	WT. OF BITUMEN (2-1) (gm)	18	24	23	25	19
4	AREA OF TRAY	0.09	0.09	0.09	0.09	0.09
5	RATE OF SPRAY (kg/m^2)	2.00	2.67	2.56	2.78	2.11
6	AVERAGE RATE OF SPRAY (kg/m^2)	2.42				

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

BRUHAT BANGALORE MAHANAGARA PALIKE

Consultant : Tejus Consultants

Contractor : Sri Sai Charan Constructions

Name of Work: Providing and laying bituminous concrete 40mm thick with hot mix plant, using 40-60 TPH capacity HMP with mechanical paver grading II (30-45mm) with 5.4 % of modified bituminous binder consisting of 4.97% of VG-30 bitumen (60/70 grade) and 0.43% of plastomeric thermoplastics (waste plastic) crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications. Clause 507 of MORTH V revision as per IRC SP-53-2015.

BITUMEN CONTENT TEST & GRADATION OF DRY MIX

BC

	Date of Test:	30-12-2021
1	Wt of Centre bowl (g)	1080
2	Wt of filter paper before Extraction (g) (F1)	3
3	Wt of Mix material (g) (W1)	500
4	Wt of Bowl + filter paper + Mix material (g)	1583
5	Wt of filter paper after Extraction (g) (F2)	4
6	Wt of Bowl + filter paper + Mix material after Extraction (g)	1558
7	Wt of Extracted material (g) (W2)	474
8	Wt of Binder (g) W=W1-W2	26
9	Bitumen content by wt of Mix (g)	5.00%

Total weight of sample taken (gms): 550

Sieve size (mm)	Weight retained (g)	Cumulative weight retained (g)	% Retained	% Passing	Specification Limits (%)
19	0	0	0	100	100
13.2	13	13	2.36	97.64	90 – 100
9.5	53	66	12.00	88.00	70-88
4.75	98	164	29.82	70.18	53-71
2.36	76	240	43.64	56.36	42-58
1.18	70	310	57.41	42.59	34-48
0.6	75	385	70.00	30.00	26-38
0.3	60	445	80.91	19.09	18-28
0.15	95	540	98.18	1.82	>12-20
0.075	10	550	100.00	-	04<08

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants

PMC for the Package-1 civil works in Dasarahalli

BRUHAT BANGALORE MAHANAGARA PALIKE

Client : Tejus Consultants

Contractor : Sri Sai Charan Constructions

Name of Work: Providing and laying bituminous concrete 40mm thick with hot mix plant, using 40-60 TPH capacity HMP with mechanical paver grading II (30-45mm) with 5.4 % of modified bituminous binder consisting of 4.97% of VG-30 bitumen (60/70 grade) and 0.43% of plastomeric thermoplastics (waste plastic) crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction in all respects complete as per specifications. Clause 507 of MORTH V revision as per IRC SP-53-2015.

BITUMEN CONTENT TEST & GRADATION OF DRY MIX

BC

		Date of Test: 03-01-2022
1	Wt of Centre bowl (g)	1080
2	Wt of filter paper before Extraction (g) (F1)	3
3	Wt of Mix material (g) (W1)	500
4	Wt of Bowl + filter paper + Mix material (g)	1583
5	Wt of filter paper after Extraction (g) (F2)	4
6	Wt of Bowl + filter paper + Mix material after Extraction (g)	1554
7	Wt of Extracted material (g) (W2)	470
8	Wt of Binder (g) W=W1-W2	30
9	Bitumen content by wt of Mix (g)	5.80%

Total weight of sample taken (gms): 550

Sieve size (mm)	Weight retained (g)	Cumulative weight retained (g)	% Retained	% Passing	Specification Limits (%)
19	0	0	0	100	100
13.2	12	12	2.18	97.82	90 – 100
9.5	54	66	12.00	88.00	70-88
4.75	100	166	30.18	69.82	53-71
2.36	74	240	43.64	56.36	42-58
1.18	71	311	56.55	43.45	34-48
0.6	75	386	70.18	29.82	26-38
0.3	59	445	80.91	19.09	18-28
0.15	95	540	98.18	1.82	>12-20
0.075	10	550	100.00	-	04<08

Remarks : Results Found to be satisfactory.

Tested by

Q.C. Engineer
Tejus Consultants